

# Risikoanalyse og risikostyring i et helhetlig perspektiv

[A Holistic and Multidisciplinary Approach to  
Risk Management]

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# Outline

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# Intro: What is Risk Management?

- ▶ Risk Management
  - Specialty of management
  - Treats risk objectively
  - Should consider not only technical risk, but also psychological, social and cultural contexts
  
- ▶ Management
  - Planning
  - Organising
  - Leading
  - Controlling (!)

To achieve organisational objectives efficiently and effectively

# Types of Risk Management

- ▶ Insurance
- ▶ Financial
- ▶ Political
- ▶ Societal
- ▶ Credit
- ▶ Safety
- ▶ Environmental
- ▶ Strategic

# Objectives of Risk Management

- ▶ Survival
- ▶ Economy
- ▶ Acceptable level of worry and anxiety
- ▶ Earnings stability
- ▶ Uninterrupted operations
- ▶ Continued growth
- ▶ Good citizenship or social responsibility
- ▶ Satisfaction of externally imposed obligations

# What is a Holistic Risk Management?

- ▶ A reporting system that should comprise:
  - holistic risk ranking and mapping
  - holistic risk aggregation
  - hierarchy of risk treatment options.
- ▶ Holistic risk management consists of two elements
  - the management of all risks of an enterprise with consideration of all risk interdependences
  - the integration of the risk management into the enterprise management.

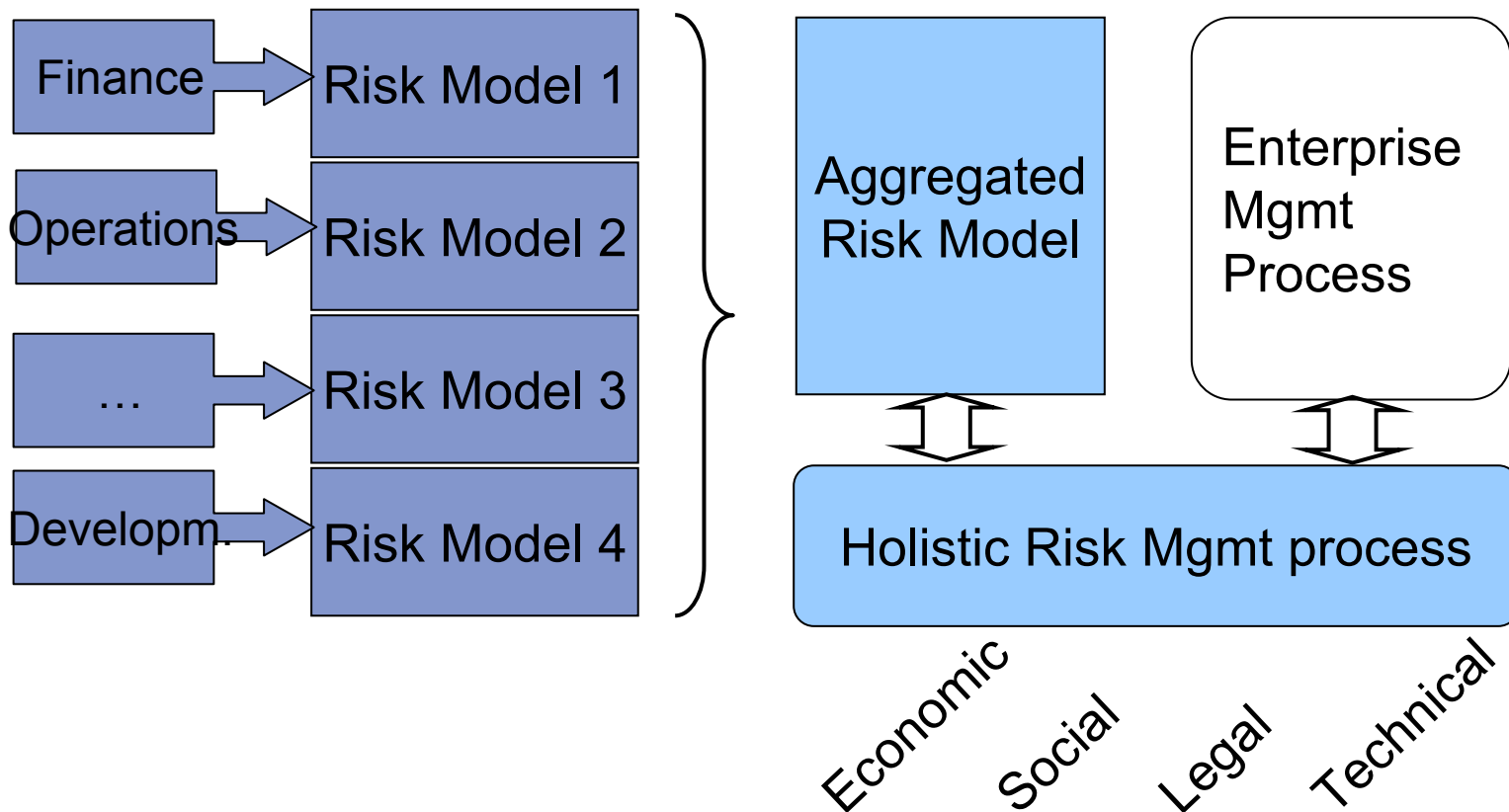
Thereby risk management is not only aligned to the risk view, but also includes the success potentials.

# Holistic Approach

Yacov Haimes; Towards a holistic approach to total risk management

- ▶ Argues risk management should be incorporated into all aspects of life and be handled by everyone.
- ▶ Must deal with holistic nature of a technological system in terms of hierarchical, organisational and functional decision-making structures
- ▶ Must Address
  - Multiple objectives and sub objectives
  - All types of risk
  - Relevant time horizons
  - Multiple decision makers, power-brokers, stakeholders and users of the system.
  - All legal, social, economic, psychological, political, technological factors affecting the system

# Holistic and Multidisciplinary Approach





# Building Holistic Risk Management

- ▶ Holistic risk management is a process to identify and quantify all the threats to ones objectives
- ▶ That means to integrate all risks
  - contractual
  - financial
  - operational
  - organizational
  - insurable

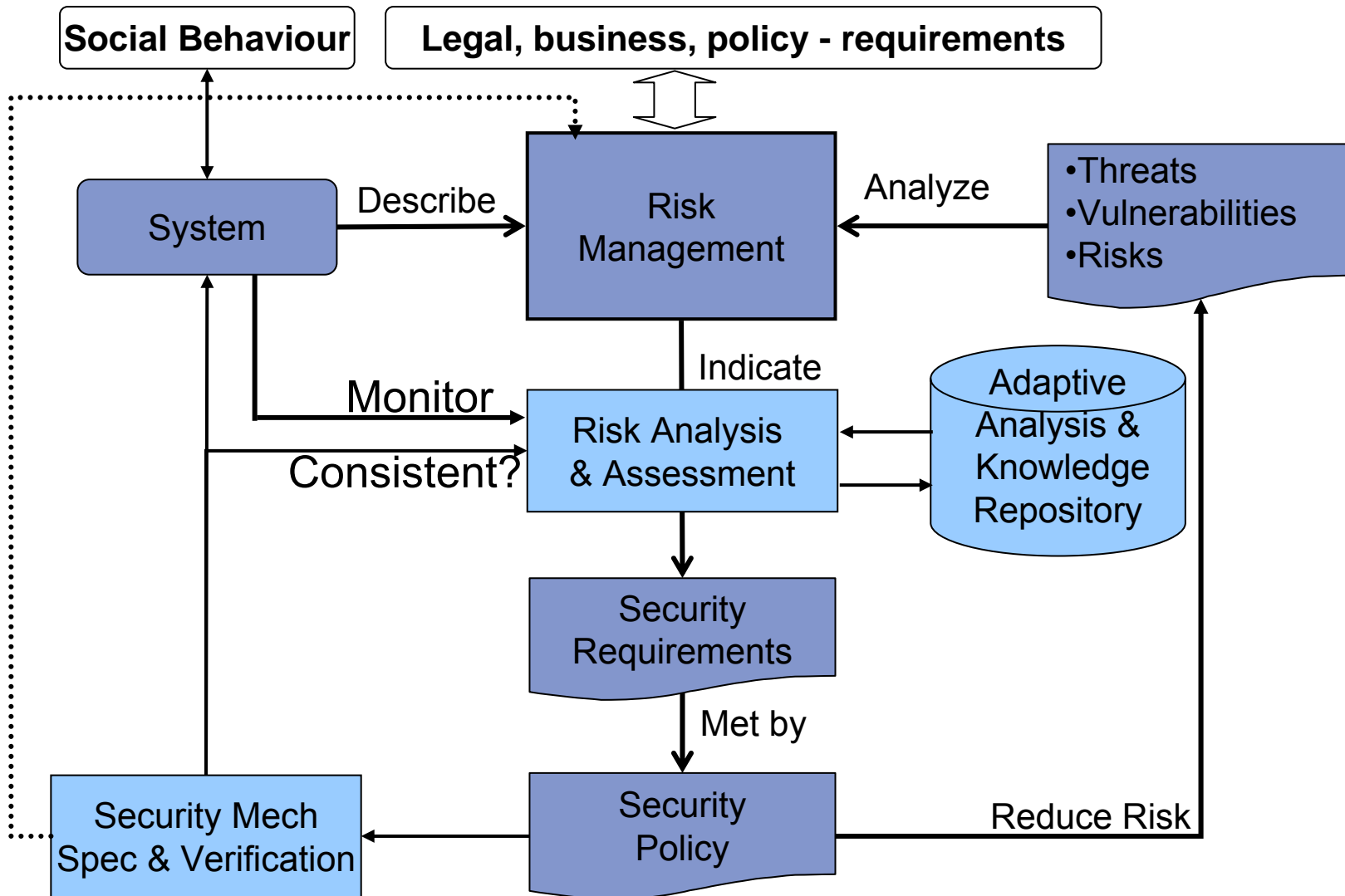
into a comprehensive risk management portfolio, based on a firm's specific risk profile, risk strategy and risk management requirements

- ▶ For a **critical infrastructure** this is a part of the game
- ▶ Utilizing such methodology allow us to mitigate loss exposures and minimize the total cost of risk

# Holistic Drivers

- ▶ Correct calculation
- ▶ Accuracy
- ▶ Efficiency
- ▶ Decision-making speed
- ▶ Data and system integrity

# A Risk Management process



# Assumptions and challenges

- ▶ There is a definable measurable phenomenon called risk
- ▶ Societal risk management concerned with minimising the probability and/or magnitude of undesired consequences without incurring excessive costs
- ▶ Critical question is how safe is safe enough
- ▶ Some challenges
  - Risk has been relived losing sight of various aspects of the phenomenon
  - Assessment of probabilities and magnitudes suitable to engineering risks but not to societal technological choices
  - Critical question is not how safe is safe enough but “how fair is safe enough?”

# Benefits

- ▶ Aggregation of selected risks
- ▶ Cost / Benefit - Analysis
- ▶ Understanding of the dynamics of risk
- ▶ Promote an efficient capital allocation
- ▶ Improve capital efficiency through managing of volatility
- ▶ Benefits for policyholders
  - Efficiency gains
  - Stabilization of risk costs
  - Administrative efficiency
  - Flexibility

# Risk Models

- ▶ A quantitative risk model is an analytical technique that can successfully integrate diverse aspects of design and operation in order to assess risk
- ▶ Such a model can be used as a formal tool for performing prioritization of rules and classification of activities, for evaluating alternative designs and for demonstrating safety equivalency or acceptability
- ▶ A challenge is the overall complexity

# Concluding Remarks

- ▶ Holistic and multidisciplinary Risk Management processes have considerable impact on organizations
- ▶ Areas of current R&D:
  - Aggregation and adaptation
  - Formal Risk Models
- ▶ Risk Management will evolve and become more holistic, not less !

# Bibliography

## ▶ Books

- Holistic Risk Management in Practice  
Paul Hopkin BSc FIRM FIIRSM FIOSH, ISBN 1-85609-227-5

## ▶ General resources

- **Managing risk**, by Alan Waring and Alan Glendon, Chapter 1.
- **Toward a holistic approach to total risk management**, by Yacob Y. Haimes.
- **How fair is safe enough?** The cultural approach to societal technology choice, by Steve Rayner and Robin Cantor.
- **Integrated Risk Management: A holistic risk management approach for the insurance industry**, by Dr. Andreas Muller, Munich, 1999
- **A Conceptual Formal Framework for Developing and Maintaining Security-Critical Systems**, IJCNS 2005, Habtamu Abie and Asmund Skomedal



# Slutt

- ▶ Takk for oppmerksomheten!
- ▶ spørsmål

